Achievement Standard

Subject Reference Digital Technologies 2.50

Title Demonstrate understanding of local area network technologies

Level 2 **Credits** 3 **Assessment** Internal

Subfield Technology

Domain Digital Technologies

Status Expiring **Status date** 29 November 2018

This achievement standard is expiring. Assessment against the standard must take place before the expiry date set out below.

Expiry date 31 December 2019 **Date version published** 29 November 2018

This achievement standard requires demonstrating understanding of local area network technologies.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate understanding of local area network technologies.	• Demonstrate in-depth understanding of local area network technologies.	• Demonstrate comprehensive understanding of local area network technologies.

Explanatory Notes

1   This achievement standard is derived from Level 7 of the Technology learning area in *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007; and is related to the material in the *Teaching and Learning Guide for Technology*, Ministry of Education at http://seniorsecondary.tki.org.nz.

Further information can be found at http://www.technology.tki.org.nz/.

Appropriate reference information is available in *Safety and Technology Education: A Guidance Manual for New Zealand Schools,* Ministry of Education at http://technology.tki.org.nz/Curriculum-support/Safety-and-Technology-Education, and the Health and Safety at Work Act 2015.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the Papa Whakaako for the relevant learning area.

2   *Demonstrate understanding of local area network technologies* involves:
   - describing networking concepts
   - explaining why the components have been used in a local area network (LAN) to achieve the desired characteristics
   - explaining how the connection technologies allow the components to function in a LAN
   - describing the access control method used in the Ethernet architecture.

   Demonstrate in-depth understanding of local area network technologies involves:
   - comparing and contrasting the characteristics and the purposes of peer-to-peer LANs and client/server LANs
   - explaining the layers in the TCP/IP networking model and the role of this model in a LAN architecture
   - explaining IP (Internet Protocol) addressing with reference to static addresses and dynamically obtained addresses
   - discussing the advantages and disadvantages of the common cable, fibre and wireless technologies for connecting the components of a LAN.

   Demonstrate comprehensive understanding of local area network technologies involves:
   - discussing IP addressing schema including the consequences for static addresses and dynamically obtained addresses
   - discussing how the access control method used in the Ethernet architecture manages Ethernet traffic on a LAN.

3   *Local area network* consists of a number of networked devices which include at least three PCs connected with an unmanaged switch, simple server elements and a single connection to the internet.

4   Networking concepts will include but are not limited to: the characteristics and purposes of a LAN, standard networking models Open System Interconnection (OSI) and Transmission Control Protocol/Internet Protocol (TCP/IP), bandwidth, data transmission modes, IP addressing, DHCP (Dynamic Host Configuration Protocol), NAT (Network Address Translation) and ICMP (Internet Control Message Protocol).

5   The components of a LAN may include but are not limited to:
   - desktop PC
   - laptop
   - mobile devices such as Netbook, PDA and Smartphone
   - switch
   - modem/router
   - printer
   - scanner
   - print server
   - network storage
   - file server
   - cables
   - wireless devices.

6   Connection technologies will include but are not limited to:
- common wired, optical and wireless technologies
- LAN architecture specified in terms of physical topologies and logical topologies.

7   Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards.

Replacement Information
This Achievement Standard and AS91378 were replaced by AS91895.

Quality Assurance

1   Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2   Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference   0233